7-17-1959

Factors Related to Enrollment in Ninth Grade Mathematics Courses in Charleston High School

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FACTORS RELATED TO ENROLLMENT [1] IN NINTH GRADE MATHEMATICS COURSES IN CHARLESTON HIGH SCHOOL

by

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This paper is submitted under Plan B as a partial requirement for a Master's degree.

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Approved by

Date 17 July 57

[1] This study is an outgrowth of a term paper, "Survey of Ninth Grade Mathematics in Charleston High School", submitted to Dr. F.R. McKenna as a requirement in Education 551.

Mathematics teachers, administrators, and counselors are concerned with the reasons why students make choices which lead them to enrollment in general math or algebra and/or no mathematics if it were not required. It is the purpose of this paper to report the results of a questionnaire based on an interpretation of the effects of environmental influences on students enrolled in ninth grade mathematics. One year of mathematics is required in the school under surveillance.

The cumulative records were the source of scholastic aptitude test scores and educational attainments and occupations of the parents of the students. In some cases the records were not complete, which explains the fact that the sum of the per cents does not always total 100.

A questionnaire, a copy of which is included in this paper, was administered to the ninety-one students in general math and one hundred thirty-four in algebra. The grade distribution of the classes is shown by the table below.

Table 1

	Ninth	Tenth	Eleventh	Twelfth
General Math	77	13	1	0
Algebra	123	8	2	1

The Science Research Associates Primary Mental Abilities for Ages 11-17 was used to obtain the I. Q. scores. In algebra the scores ranged from 68 to 140 with

100 students being 108 or below. Only four of this number were below 80. The general math students' scores were from 60 to 108 with 35 below 80.

The educational attainments of the parents are as follows:

Table 2

	General Math	Algebra
Less than eighth grade	6.0%	5.0%
Eighth grade	37.3%	20.1%
Ninth-eleventh	19.7%	14.0%
Twelfth	12.6%	24.2%
College but not graduate	1.1%	7.8%
College graduate	.5%	8.5%

The results of the questionnaire are as follows:

Table 3

Community Background

	General Math	Algebra
Charleston	50.5%	57.5%
Farm	32.5%	32.5%
Small town	17.0%	9.8%

Table 4

Schools Attended

	General Math	Algebra
Other than Charleston (not including Eastern)	34.0%	23.0%
Eastern Laboratory School	5.7%	28.0%

Table 5

Family Relations

	General Math	Algebra
Older brothers and sisters	75.0%	54.6%
Younger brothers and sisters	65.0%	60.0%
Only child	9.0%	10.0%

Table 6

Favorite Recreations

	General Math	Algebra
Television	35.0%	22.3%
Records	37.5%	31.5%
Swimming	53.4%	46.0%
Playing (sports)	89.8%	46.9%
Hunting and fishing	56.9%	38.4%
Dancing and parties	14.8%	38.5%
Skating	4.5%	12.3%
Hiking and camping	6.8%	4.6%
Horseback riding	2.3%	23.8%
Bowling	2.3%	0.0%
Reading	2.3%	11.5%
Working on cars, radios, etc.	10.2%	3.2%
Boating and water skiing	3.4%	.8%
Movies	0.0%	14.0%
Hobbies (painting, photography, cooking, etc.)	1.1%	6.4%

Table 7

Movie Attendance

	General Math	Algebra
Monthly	6.4%	20.0%
Twice monthly	2.4%	14.6%
Weekly	5.7%	28.0%
Twice weekly	4.0%	7.0%

Table 8

Newspapers in the Home

	General Math	Algebra
Charleston paper only	34.0%	47.7%
Metropolitan paper	28.0%	39.0%
Other small town papers	18.0%	10.0%
No daily paper	27.0%	6.9%

Table 9

Magazines

	General Math	Algebra
Life	17.0%	27.7%
Look	14.8%	24.6%
Saturday Evening Post	10.2%	24.6%
Farm	19.0%	8.0%
Woman's	16.0%	18.5%
Teen Age	14.8%	27.0%
True Story, etc.	17.0%	10.8%
Movie and T.V.	12.5%	19.0%
Car	12.3%	14.6%

Table 9
(cont.)

	General Math	Algebra
Sport and Outdoor	5.5%	14.6%
Reader's Digest	1.1%	7.7%
Science	7.9%	9.8%
Time	0.0%	4.6%
Hobby(photography, etc.)	0.0%	5.3%
National Geographic	0.0%	3.1%
None	18.0%	4.6%

Table 10

Books

	General Math	Algebra
Love	16.0%	42.3%
Mystery	26.0%	50.0%
Detective	1.1%	15.0%
Western	3.3%	24.6%
History and Pioneer	5.6%	26.0%
Animal	2.2%	20.0%
Adventure	1.1%	40.0%
Science and Science Fiction	1.1%	26.1%
War	2.2%	17.6%
Career	0.0%	3.8%
Sports	2.2%	11.5%
Car	11.3%	0.0%
Biography	3.3%	0.8%
Gangs	1.1%	0.0%

Table 10
(cont.)

	General Math	Algebra
Comic	32.9%	3.0%
Aviation	12.2%	0.0%
None	18.0%	0.0%

Table 11

Organizations Attended Regularly

	General Math	Algebra
Church	61.3%	80.0%
Scout	10.2%	4.6%
4-H	18.0%	21.5%
Other	5.5%	1.6%
Saints (gang)	1.1%	0.0%
No organization	20.4%	12.3%

Table 12

Educational Plans

	General Math	Algebra
Expect to graduate from high school	84.0%	98.4%
Expect to graduate from college	27.0%	64.6%
Parents expect child to graduate from high school	93.0%	97.7%
Parents expect child to graduate from college	32.0%	70.0%

Table 13

Favorite Subjects

	General Math	Algebra
Math	47.7%	39.0%
English	32.0%	50.0%
Science	24.0%	33.0%
General Business	16.0%	14.0%
Vocational	34.3%	16.0%
Foreign Language	2.2%	10.1%
Art	3.3%	5.4%
Typing	1.1%	4.0%
History	4.5%	7.0%
None	8.0%	2.4%

Table 14

Ambition

	General Math	Algebra
Professional	7.7%	22.4%
Career	20.0%	12.6%
Office work	1.1%	16.8%
Entertainer	3.3%	3.0%
Skilled laborer	5.5%	2.4%
Business	5.5%	2.3%
Unskilled laborer	18.0%	0.8%
Engineer	2.2%	6.4%
Armed Services	3.3%	4.0%
Farmer	9.9%	5.3%

Table 15

Problems Listed by Students

	General Math	Algebra
Dislike school and inattentive	9.9%	6.4%
Trouble with parents	2.2%	1.6%
Social	5.5%	.8%
Difficulty with subjects	8.8%	1.6%
No study halls	0.0%	5.6%
No place to study at home	0.0%	1.6%

There was no question why the thirty-four students with I.Q. scores above 108 were enrolled in algebra or the thirty-five students with I.Q. scores below 80 were studying general math. Probably the four algebra students with the very low scores should also have been enrolled in general math. It was the group of average and low average ability--eighty-three in algebra and forty-two in general math--who were carefully studied. (Only ninth grade students were included in this special study.)

A comparison of the parental background of the students of this group (I.Q.: 80-108) is shown below:

Table 16

Parents' Educational Attainments

	General Math	Algebra
Less than eighth grade	3.6%	9.6%
Eighth grade	39.6%	15.6%
Ninth-eleventh	26.4%	15.0%

Table 16
(cont.)

	General Math	Algebra
Twelfth	15.6%	28.8%
Thirteenth-fifteenth	2.4%	9.0%
Sixteenth	0.0%	9.0%

Table 17

Parents' Occupation

	General Math	Algebra
Professional	2.4%	9.6%
Farmer	24.2%	20.4%
Business	9.6%	13.2%
Skilled laborer	12.0%	18.0%
Unskilled laborer	40.8%	27.6%

In other areas such as use of newspapers, magazines, books, membership in organizations, the per cents showed the same trend as did those tabulated for the class as a whole.

Table 16 showed that a high percentage of the parents of general math students terminated their education at eighth grade or lower while a relatively low percentage completed high school. None were college graduates. This trend was reversed for the parents of algebra students with nine per cent being college graduates. These figures indicate that the educational attainments of the parents have a very definite effect on the intellectual ambitions of their children.

As indicated by Table 17 there was a higher percentage

of professional, business, and skilled labor workers included in the group of parents of algebra students. This division of occupations is, of course, consistent with the training of the two groups.

Tables 6-11 showed that general math students show less interest than do algebra students in activities which require much thought. Quite likely economic conditions influenced their choices in some areas--such as movies and horseback riding. However, financial conditions cannot explain a lack of interest in reading or pursuing a hobby. Likewise, favorite magazines and books of the general math students were of a type which are not very challenging.

An attempt to find the reason for this intellectual inertia leads directly to the home environment. The family is the institution which makes the greatest contribution to the development of the child. Dr. Robert M. Goldenson says that parents teach long before the teacher--by the types of toys they give their children, playing little games with them, clear and patient explanations rather than "brushing them off", showing the child how to find information from books, talking with him, reading to him, and nourishing a desire to learn.[1]

Many other institutions, such as church, library, newspapers, and magazines are eager and willing to help develop the child's potentialities but are unable to do so if the child does not come to them. Even the school connot

accomplish what it should when the child comes with no will to learn. The big problem seems to be one of arousing parents to accept their total responsibility.

[1]Robert M. Goldenson, "Education Before the First Grade," Parents' Magazine, October 1958, pp. 48-49, 118-120.

Conclusion

Algebra is generally considered an important college preparatory course while the nature and value of a good general math course are quite often not recognized. Many students, parents, teachers, and administrators consider general mathematics nothing more than a review of the fundamentals of arithmetic--in fact, just "busy work". If the student has not learned to add, subtract, multiply, and divide in the elementary grades, he will quite likely find such computation just as difficult and uninteresting in high school. If he has already mastered these fundamentals of arithmetic, he should not waste his time with a year of drill.

A good general math course should be just what the name implies--basic instruction in the concepts and skills the pupils have not assimilated in the grades and an introduction to the different branches of mathematics. The content should be practical and appealing to pupils and make clear the mathematical meanings which may have escaped them in their previous experience and those which are new to them. It should teach reasons and emphasize the value of knowing the reason for each step in the basic process. The course should be taught by the best prepared teacher, not just anyone who happens to have a free period. Some pupils, previously lost to mathematics, may be saved for science and mathematics by

good experiences in a general mathematics course; others will find in such a course the practical background they need for vocational and life preparation.

SAMPLE QUESTIONNAIRE

Name_____Age____Class (circle) 9 10 11 12

Where do you live? Charleston __ Farm __ Small town __

Number of brothers and sisters older than you _____

Number of brothers and sisters younger than you _____

What are your favorite recreations? Mark three.

Television __ Swimming __ Fishing __ Hiking __

Records __ Tennis Dancing __ Reading __

Playing (sports) __ Hunting __ Parties __ Others _____

Horseback riding __ Skating __ Movies __ _____

How many times each month do you attend movies?_____

What do you read? Check below.

Daily newspapers in your home._____

_____

Magazines you read or look through carefully._____

_____

Books (other than book reports for English)

Love __ History __ Science fiction __

Mystery __ Animal __ War __

Detective __ Pioneer __ Other_____

Western __ Adventure __ _____

Organizations you attend regulary.

Church __ Scout __ 4-H __ Other_____

Do you expect to graduate from high school?_____

Do you expect to graduate from college?_____

Do your parents expect you to graduate from high school?_____

Do your parents expect you to graduate from college?_____

What are your favorite subjects? (Do not list P.E., band, chorus)

First choice_____Second choice_____

What do you hope to do when you are an adult?_____

_____

If you care to do so, state any problem which you feel is preventing you from being as successful in school as you would like to be. It might be a personal problem (such as not being able to make friends), a home problem, or one associated with school.

ACKNOWLEDGEMENTS

The writer wishes to thank Mr. Marvin Smith, principal of Charleston High school, for approving the questionnaire and its administration; Mr. Frank Groves, counselor, for permission to use the cumulative records; and Mr. Harry White and Mr. Bernard Waren for administering the questionnaire in their algebra classes. She is also indebted to Dr. L. A. Ringenberg and Dr. Lester Vandeventer for their suggestions for expanding the original paper.